

CLAIMS

1. A data storage system comprising data storage means (46) for storing data and an asynchronous transmitter/receiver (45) arranged to communicate over an IEEE 1394 network (30), the data storage means (46) being arranged to accept inputs and to output via an access limiting connector, wherein at least selected data files of the stored data include copy control limiting information, a request for a data file including the copy control limiting information from the data storage means being permitted by the access limiting connector only upon successful authentication, a permitted requested file being encrypted and transmitted asynchronously by the transmitter/receiver (45).

2. A data storage system according to claim 1, wherein the transmitter/receiver (45) operates in accordance with the DTCP specification.

3. A data storage system according to claim 1 or 2, wherein the access limiting connector is an IEEE 1394 bridge.

4. A data storage system according to claim 1, 2 or 3, wherein the storage means comprises a serial bus 2 protocol data storage device.

5. An MP3 player (40) incorporating the data storage system of any preceding claim.

6. An asynchronous data communication system including a sink (40; 220) and a source (10; 210), at least the sink (40; 220) incorporating a data storage system according to any of claims 1 to 4, wherein the source (10; 210) includes authentication and encryption systems arranged to communicate with the data storage system of the sink to facilitate asynchronous encrypted data transfer from the source (10; 210) to the sink (40; 220).

7. An asynchronous data communication system according to claim 6, further comprising an intermediate system (200) in communication with the IEEE 1394 network connected to the sink (40; 220) and another network (230) connected to the source (10; 210), wherein asynchronous data packets
5 transmitted between the source (10; 210) and the sink (40; 220) are transmitted via the intermediate system (200), the intermediate system (200) including a bridge (203) arranged to convert a received data packet to the appropriate network command set for the destination network prior to onward transmission over the destination network.

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8. An asynchronous communication system according to claim 6 or 7, wherein transmitted data files include a header (310) including copy control information and key change information

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9. A data storage and transmission method comprising:
storing data in a data storage means arranged to accept inputs and to output via an access limiting connector, wherein at least selected data files of the stored data include copy control limiting information;
permitting a request for a data file including the copy control
20 limiting information from the data storage means only upon successful authentication; and,
encrypting and asynchronously transmitting a requested file upon permitting the request.

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10. A data storage and transmission method according to claim 9, wherein the encryption and transmission step is in accordance with the DTCP specification.

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11. A data storage and transmission method as claimed in claim 10, wherein the encryption and transmission of the requested file comprises :
- generating at least one data packet from the file, each packet comprising :

- a standard header 300 consistent with headers used in DTCP and IEEE 1394 networks;
 - a payload header 310 comprising an EMI field 311 used to convey CCI information and an odd/even field 312 used to convey key change notification, which fields are identical to the DTCP specification for isochronous packets; and
 - a payload 320 comprising encrypted data, wherein an extension AV/C command is implemented to encrypt the data and map the DTCP security commands;
- and
- transmitting each generated data packet asynchronously over the IEEE1394 bus.

12. A data storage and transmission method according to any of claims 9 to 11, further comprising the step of operating on a first network and accepting communications from a second network wherein an intermediate system bridges the first and second networks, wherein if a request is received from the second network, the step of transmitting a requested file further comprises the step of transmitting to the intermediate system, the intermediate system converting received data to the appropriate network command set for the second network and transmitting the converted data to the second network.

13. A method for securing asynchronous data transmitted over a IEEE1394 bus comprising :

- requesting a file;
- performing authentication and key exchange between sender and receiver of the file, in accordance with the DTCP specification;
- generating at least one data packet from the file, each packet comprising :

- a standard header 300 consistent with headers used in DTCP and IEEE 1394 networks;
 - a payload header 310 comprising an EMI field 311 used to convey CCI information and an odd/even field 312 used to convey key change notification, which fields are identical to the DTCP specification for isochronous packets; and
 - a payload 320 comprising encrypted data, wherein an extension AV/C command is implemented to encrypt the data and map the DTCP security commands;
- transmitting each generated data packet asynchronously over the IEEE1394 bus; and
 - receiving and decrypting each data packet.